

TAXONOMIC STUDIES IN THE  
MICONIEAE (MELASTOMATACEAE). V.  
*MICONIA STENOBOTRYS*, CIRCUMSCRIPTION  
AND RELATIONSHIPS

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ABSTRACT

*Miconia stenobotrys*, a member of section *Chaenopleura*, is considered to constitute a species from a phenetic as well as a phylogenetic standpoint. It occurs widely in the Cordillera Central/Massif du Nord of Hispaniola, growing mainly in forests dominated by *Pinus occidentalis*. The species is circumscribed broadly, including *M. azuensis*, *M. artibotinensis*, *M. buchii*, and *M. leptoneura*, as well as populations with very prominently 4-flanged stems from the Parque Nacional José del Carmen Ramírez/Loma la Vieja region of the Dominican Republic. A revised description and an illustration are provided, and a list of specimen citations is presented. *Miconia stenobotrys* is distinguished from its presumed closest relatives, i.e., *M. krugii*, *M. samanensis*, and *M. zanonii*, by its falcate leaves that are slightly to strongly V-folded along the midvein and distinctive elongated inflorescences. It is quite variable in several morphological features, especially in extent of development of U-shaped stem flanges, number of multicellular, long-stalked, gland-headed hairs on the stems and leaves, degree of tothing of the leaf margin, placement of secondary veins of the lamina, and flower size. However, no phenetic discontinuities were discerned among analyzed specimens, and the above listed characters often vary within populations.

Key Words: *Miconia stenobotrys*, *Miconia* sect. *Chaenopleura*, Melastomataceae, phylogenetic species concept

INTRODUCTION

In the course of field work in connection with a taxonomic revision of *Miconia* section *Chaenopleura* Benth. & Hook. and a floristic treatment of Melastomataceae for the Flora of Hispaniola a diverse array of populations representing a species (or several related species), i.e., the *Miconia stenobotrys* complex, was collected. These plants, easily recognized by their leaves that are falcate and slightly to strongly V-folded along midvein and their distinctive elongated cymose inflorescences, are referable to *Miconia* sect. *Chaenopleura* (see Cogniaux, 1891; Judd and Skee, 1991). The West Indian members of section *Chaenopleura* form a distinctive, diverse, and presumably monophyletic group, which may be diagnosed by the possession of an actinomorphic androecium, that is, the stamens form a radially symmetrical pattern

around style (instead of being deflexed to one side of flower). The stamens are white and glabrous, and the obovate anthers each open by two longitudinal slit-like pores. The group is also characterized by globose fruits that turn from red to blue (or blue-white) at maturity and angular-obovoid seeds with a more or less smooth testa (see Judd and Skee, 1991, figure 10B). Fifty-six Antillean species of *Miconia* sect. *Chaenopleura* have been (or are in the process of being) described. As discussed herein, some of these appear to be synonymous with other species. A few undescribed species, however, recently have been discovered (Judd, unpubl. data), and the group likely is represented by ca. 50 species in the Greater Antilles (see Judd and Beaman, 1988; Judd and Skee, 1987; Judd et al., 1988; Judd and Skee, submitted a and b; Liogier and Martorell, 1982; León and Alain, 1957; Moscoso, 1943; Proctor *in* Adams, 1972).

Specific limits among the populations comprising the *Miconia stenobotrys* complex have been especially troublesome, with some botanists recognizing several species, i.e., *M. stenobotrys*, *M. azuensis*, *M. buchii*, *M. artibotinensis*, and *M. leptneura* (Cogniaux *in* Urban, 1908; Urban and Ekman *in* Urban, 1929; Moscoso, 1943) and others (in herbarium identifications) applying the names *M. azuensis* or *M. stenobotrys* more broadly. *Miconia stenobotrys* is here re-circumscribed broadly and a detailed description and an illustration are provided. Its infraspecific pattern of variation is assessed through traditional taxonomic procedures, i.e., a survey of numerous populations based on field-studies and herbarium material, and a Principal Components Analysis (PCA). The species is characterized eco-geographically and a list of specimen citations is presented. *Miconia stenobotrys*, as re-circumscribed, is compared with several closely related species, and its phylogenetic relationships are assessed briefly.

#### MEASUREMENTS/HERBARIUM CITATIONS

All measurements (except for plant height, flower and fruit color, which were taken from information given on specimen labels or observed in the field, or floral and fruit measurements, which were taken from liquid-preserved or rehydrated material) included in the species descriptions come directly from dried herbarium material. The inflorescence length was measured from terminal flower to point at which first branch-pair emerges from

axis, and the peduncle is defined as the internode separating cyme from uppermost leaf pair. The two or more prominent veins running in convergent arches toward the leaf apex are termed secondary veins since they clearly branch from the midvein. The detailed description has a format similar to that of other descriptions published as part of a series of taxonomic studies in the Miconieae, which allows for easy comparison; see Judd and Beaman (1988), Judd and Skean (1987), Judd et al. (1988), and Judd and Skean (submitted a and b).

In the citation of specimens, abbreviations of institutions follow the eighth edition of *Index Herbariorum* (Holmgren et al., 1990).

#### PHENETIC STUDIES

*Miconia stenobotrys*, as traditionally delimited, consistently has been confused with several phenetically similar "species," i.e., *M. azuensis*, *M. buchii*, *M. artibotinensis*, and *M. leptoneura*. In addition, a population of plants clearly belonging within the *Miconia stenobotrys* complex, but with 4-flanged stems, i.e., two flanges extending below each point of petiole attachment and joining to form a conspicuous, U-shaped flange ca. 1–2 mm broad at the adjacent lower node, recently has been discovered in the Dominican Republic, prov. San Juan, near the "Forestry House" above Los Fríos, in the Parque Nacional José del Carmen Ramírez; see *García 1245*, *Judd 6693*, *6694*, *6698*, *Skean 3269*. Somewhat similar plants were collected by Eric Ekman on the nearby Loma la Vieja, i.e., *Ekman H13410* and *H13441*. Typically, the twigs of *M. stenobotrys* (or the other species listed above) are square to rectangular in cross-section, but more or less lack flanges. The phenetic separation between the above listed species of the *Miconia stenobotrys* complex, along with the plants with conspicuously 4-flanged stems, was evaluated by a Principal Components Analysis of 114 flowering or fruiting shoots representing the full range of observed variation; see discussion of this technique in Sneath and Sokal (1973) and Wiley (1981). This analysis employed the CLUSTAN mainframe computer program, version 3.2 (Wishart, 1987). Variation in 12 continuously varying or "count" characters of leaf, stem, and inflorescence morphology (Table 1) was scored for each specimen and the taxa ordinated along the first two principal components (Figure 1). These characters show variation among populations of the *Miconia steno-*

Table 1. Characters used in PCA of *Miconia stenobotrys* complex. (All node and leaf measurements taken at third node below cyme.)

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1. Petiole length
  2. Lamina length
  3. Lamina width
  4. Distance between base of lamina and point at which major secondary veins join with midvein
  5. Distance between major secondary veins and leaf margin (as measured at lamina midpoint)
  6. Number of teeth per 2 cm (centered at lamina midpoint)
  7. Length of largest tooth (located at any point along leaf margin)
  8. Flange width (measured at widest point)
  9. Number of multicellular, long-stalked, gland-headed hairs per internode
  10. Inflorescence length
  11. Pedicel length
  12. Basal inflorescence branch length
- 

*botrys* complex, and several have been used in specific delimitations within the group (see Cogniaux in Urban, 1908; Urban and Ekman in Urban, 1929). The resulting diagram (Figure 1), describing 60% of the variation contained in the original data set, indicates that there are no phenetic discontinuities among analyzed specimens, although some divergence is evident between specimens from the Jarabacoa–Constanza/El Rubio regions, the Lagunas de Cenobí–La Cidra–La Leonor/Hinche regions, the Parque Nacional José del Carmen Ramírez–El Frío region, and the Morne Belance region. Plants of the Río Maguá region (as represented by *Valeur* 736), the Restauración–Río Artibonito region and populations to the west in Haiti (e.g., *Ekman* H3396, *Ekman* H6275), and Loma la Vieja region (as represented by *Ekman* H13440, *Ekman* H13441) are more or less intermediate between the phenetically divergent populations of the Constanza–Jarabacoa and the Lagunas de Cenobí–La Cidra–La Leonor regions (see Figures 1 and 2). The strongly stem-flanged plants of the Parque Nacional José del Carmen Ramírez–El Frío region, although distinctive, show an overlapping pattern of phenetic variation with plants of the Lagunas de Cenobí–La Cidra–La Leonor region, the Hinche region, and the Loma la Vieja region (Figure 1). Considerable variability is present, but no correlated character states were found that could be used to delimit the members of this complex into two or more phenetically delimited species. Variation is present in all of the characters included in Table 1

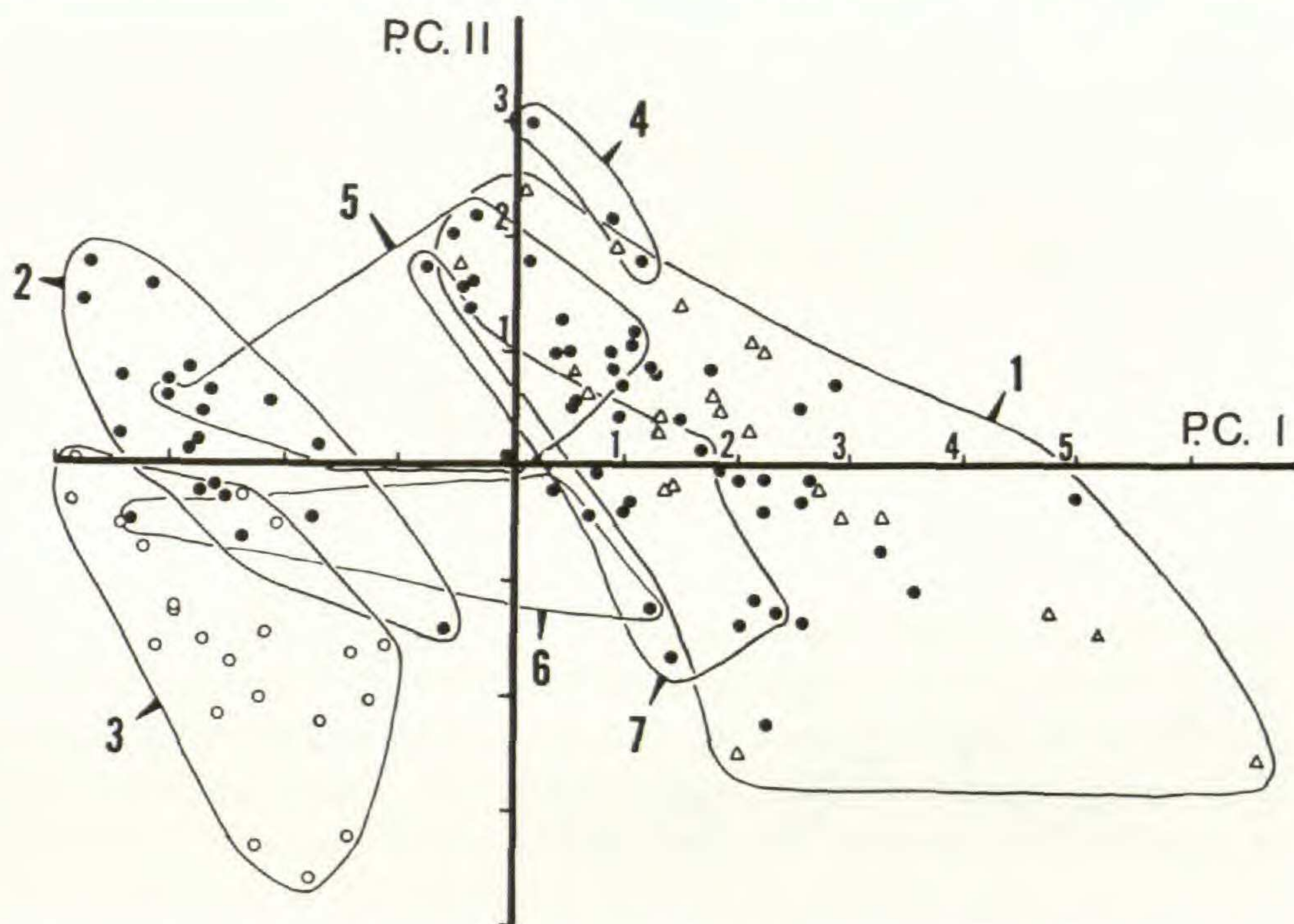


Figure 1. Plot of the first two principal components resulting from phenetic analysis of *Miconia stenobotrys* complex of Hispaniola. PC I describes 45% of the variation; PC II describes 15% of the variation. Circles = specimens collected in the Parque Nacional José del Carmen Ramírez-El Frío region, i.e., Judd 6693, 6694, 6698, & García 1245; triangles = specimens collected by Judd in the Constanza-Jarabacoa region, i.e., 2955, 5125, 5143, 6626, 6627, 6629, 6653, 6659; dots = other specimens. Circled dots indicate variation expressed by plants of a particular geographical region: 1 = Constanza-Jarabacoa region; 2 = Lagunas de Cenobí-La Cidra-La Leonor-Hinche region; 3 = Parque Nacional José del Carmen Ramírez-El Frío region; 4 = Morne Belance region; 5 = Río Maguá region; 6 = Loma la Vieja region; and 7 = Restauración-Río Artibonito region.

(see description), but is especially remarkable in extent of flange development (stems lacking flanges to conspicuously 4-flanged), marginal condition (leaves entire to clearly serrate, and teeth with or without long-stalked gland-headed hairs), indumentum (stems and leaves with multicellular, long-stalked, gland-headed hairs, or such hairs lacking), and placement/number of secondary leaf veins (2 or 4, placed ca. .7–6 mm in from margin, and  $\pm$  basal to strongly suprabasal). Although not included in the phenetic analysis, flower size is also quite variable, especially the length of the petals and internal calyx lobes. (As with the vegetative and inflorescence characters, floral features show more or less continuous variation among populations.) Certain character states are

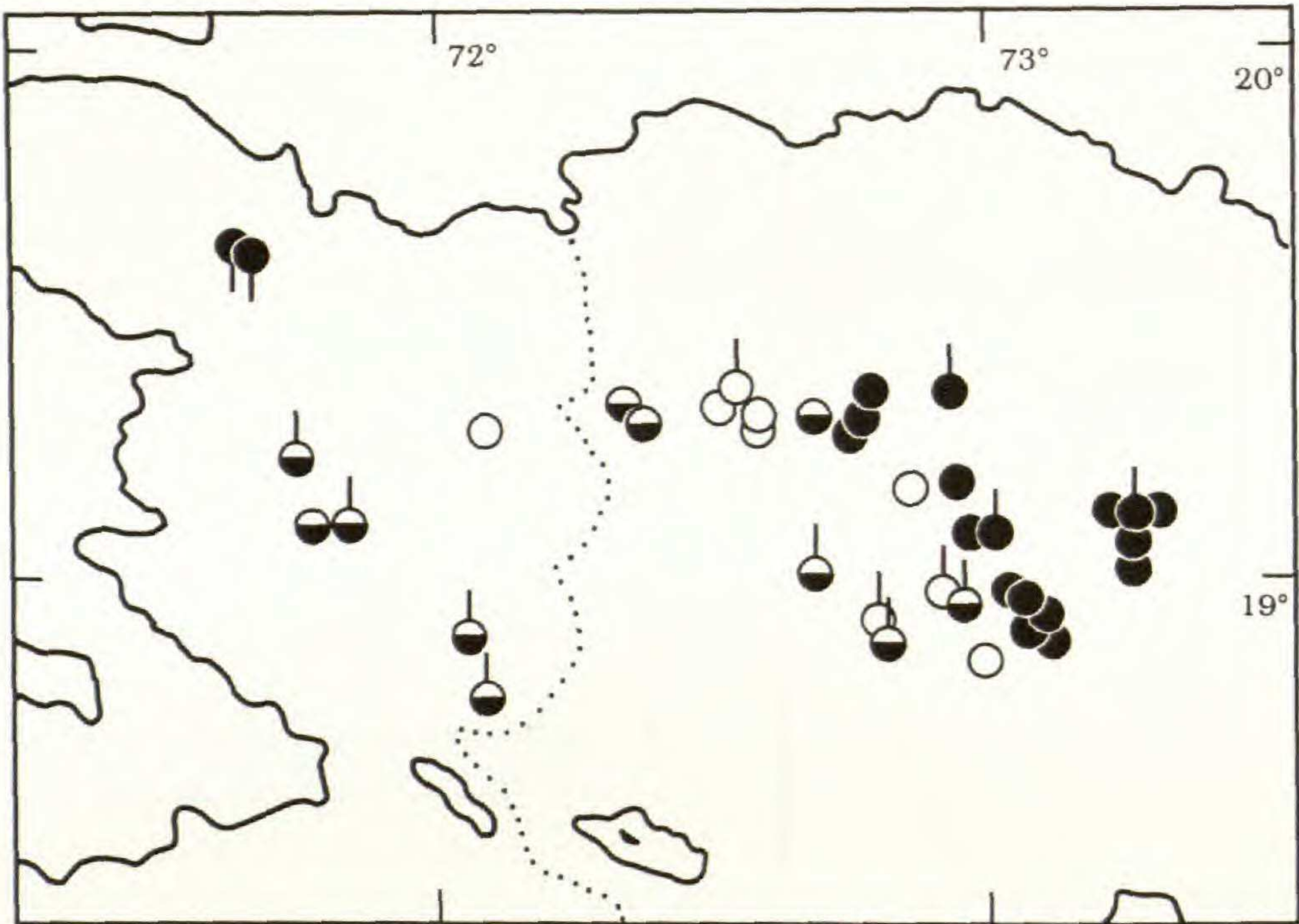


Figure 2. Geographical distribution of certain morphological features in *Miconia stenobotrys*. Dots = leaves serrate/serrulate nearly entire length, circles = leaves  $\pm$  entire, half-closed circles = intermediates; tail up = stems  $\pm$  flanged, no tail up = stems lacking flanges; tail down = marginal teeth associated with multicellular long-stalked hairs, no tail down = marginal teeth not associated with long-stalked hairs (or teeth lacking).

quite broadly distributed within the species' geographical range, although some are more common in a particular geographic region than another; see discussion below (and Figure 2). It is clear that different character states show independent geographical trends. In contrast, *M. stenobotrys* is easily distinguished from presumably related species (see *Phylogenetic studies* section). Thus the members of the *Miconia stenobotrys* complex are all referable to a single species, under either the phenetic or traditional-taxonomic species concepts. That is, *Miconia stenobotrys* is a morphological entity that shows no major internal discontinuities in its pattern of variation, and is separated from other such entities by a consistent morphological gap (see Judd, 1981, 1986; Judd and Beaman, 1988).

In contrast to many members of *Miconia* sect. *Chaenopleura*, *M. stenobotrys* has been well collected; populations from the Constanza–Jarabacoa region are especially well represented in herbaria (see Figure 1). It is clear, however, that recent collecting has

expanded our understand of this species' pattern of variation, e.g., specimens collected by Judd in the Parque Nacional José del Carmen Ramírez–El Frío region (Figure 1, circles) and in the Constanza-Jarabacoa region (Figure 1, triangles). Additional collections are needed from the Río Maguá and Loma la Vieja regions (Figure 1, groups 5 and 6).

#### PHYLOGENETIC STUDIES

*Miconia stenobotrys* has more or less glabrescent leaves, stems, inflorescence axes, and hypanthia, i.e., they do not have a conspicuous indumentum of ferruginous stellate-branched hairs found in most Antillean members of *Miconia* sect. *Chaenopleura*. Other glabrescent species include *M. barkeri* Urban & E. Ekman, *M. calycina* Cogn., *M. krugii* Cogn., *M. leptantha* Urban & E. Ekman, *M. samanensis* Urban, and *M. zanonii* Judd, Skean, & Beaman (all of Hispaniola), and these species may constitute a monophyletic group if the glabrescent condition is taken as synapomorphic. (The phylogenetic relationships of these species will be considered in more detail in a planned cladistic analysis of the Antillean species of section *Chaenopleura*.) *Miconia stenobotrys* is distinguished from the above listed glabrescent species (and from any other Antillean member of the section) by its V-folded and usually strongly falcate leaf blades and distinctive elongated inflorescences, i.e., 4.5–31.5 cm long, 2–5 cm wide, with 3 to 13 major branch-pairs (each of which is a  $\pm$  raceme-like cyme). Among the populations of *M. stenobotrys* these similarities are certainly synapomorphic, and the species is, therefore, tentatively considered to be monophyletic, i.e., a cladospecies (Donoghue, 1985; Mishler, 1985; Mishler and Brandon, 1987; de Queiroz and Donoghue, 1988).

No population or group of populations within the *Miconia stenobotrys* complex can be segregated as distinct species because none are diagnosable, i.e., no population possesses a fixed character that distinguishes it from all individuals belonging to other populations. All populations of *M. stenobotrys*, in contrast, are clearly diagnosable from populations of related species, e.g., *M. krugii*, *M. samanensis*, *M. zanonii*, by fixed character differences. Thus, *Miconia stenobotrys* also constitutes a phylogenetic species in the sense of Cracraft (1989), Nixon and Wheeler (1990, p. 218), and Davis and Nixon (1992, p. 427): "the smallest aggregation

of populations . . . diagnosable by a unique combination of character states in comparable individuals.”

The geographical pattern of variation among populations of *Miconia stenobotrys* is outlined below. The populations in the northwestern portion of the Cordillera Central (Dominican Republic), especially in those in the vicinity of Jarabacoa, Constanza, and El Rubio, show a high frequency of individuals with strongly toothed leaves (Figure 2). Some individuals have a very slight development of stem-flanges, although most lack such structures or have them restricted to the primary inflorescence axis. Plants with leaf blades having strongly suprabasal secondary veins are more frequent in these populations than in those further east in the Cordillera Central or in the mountains of Haiti.

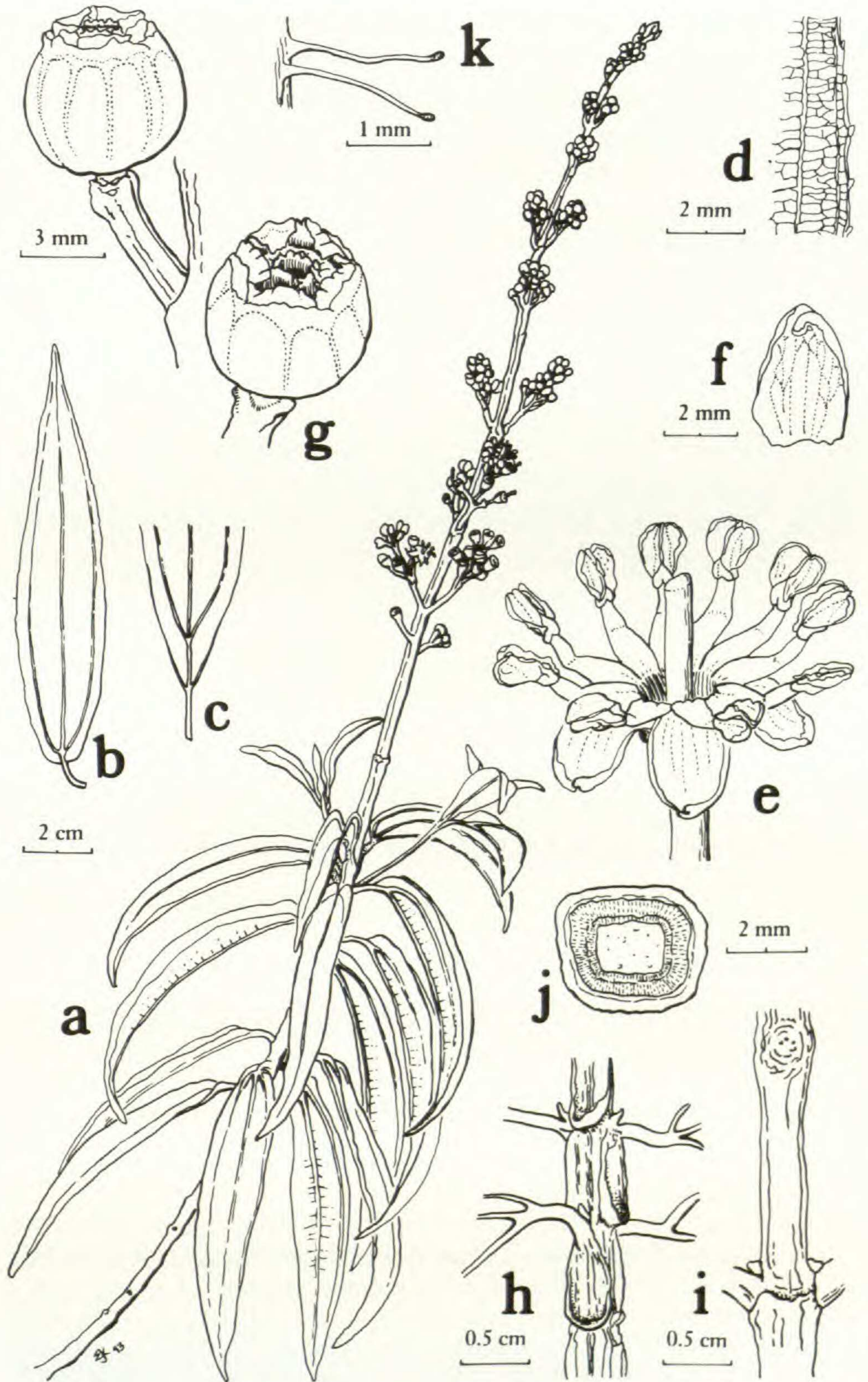
Populations of the Lagunas de Cenobí–La Cidra–La Leonor region (Cordillera Central, Dominican Republic) and the area northeast of Hinche (Massif du Nord, Haiti) are distinctive because of their entire margined leaves with the secondary veins placed very near the lamina margin (Figure 2). Occasional plants with flanged stems occur in these regions. Populations in the vicinity of Loma la Vega and the “Forestry House” (near El Frío) at the Parque Nacional José del Carmen Ramírez (Cordillera Central, Dominican Republic) are very similar to those of the La Cedra, La Leonor, and Hinche populations, but show a much stronger and consistent development of stem-flanges (Figures 2 and 3). Interestingly, the nearby and morphologically similar population near Las Lagunas (to the south of Loma la Vieja) lacks stem flanges.

Plants of the Restauración–Río Artibonito region (Cordillera Central, Dominican Republic) and populations to the west in Haiti (Figure 2) are slightly serrulate and show a variable development of stem flanges. Plants of the Río Maguá region (Cordillera Central, Dominican Republic) show variation in degree of marginal toothing and inflorescence length. These plants are thus somewhat intermediate between the three groups of populations discussed above (Figures 1 and 2).

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Figure 3. *Miconia stenobotrys*: a, habit; b, c, leaves; d, leaf margin; e, flower; f, petal; g, berries; h, stem, showing U-shaped flanges; i, stem, lacking flanges; j, stem, x-section; k, multicellular, long-stalked, gland-headed hairs, on stem.





The plants of the Morne Belance region (Massif du Nord, Haiti) are distinguished in that their leaves are strongly serrate with a long-stalked, gland-headed hair at the apex of each tooth. Plants of other populations usually lack such hairs on their teeth. Juvenile leaves or leaves of rapidly growing shoots, however, usually possess such hairs, even in populations in which reproductive-shoot leaves are more or less entire. A similar pattern of variation, i.e., long-stalked, gland-headed hairs on teeth of juvenile leaves, is seen in several other species of section *Chaenopleura*, e.g., *M. adenocalyx* Urban & E. Ekman, *M. ferruginea* (Desr.) DC., *M. krugii*, *M. samanensis*, *M. santanana* Judd & Skean (ined.). This condition, therefore, is not used as the basis for segregating the Morne Belance plants (as *M. buchii*). Long-stalked, gland-headed hairs are also moderately scattered on stems and leaves of these plants. These hairs, however, are also found on stems (and less commonly leaves) of some plants in the remaining populations of *M. stenobotrys*. In fact, the density of gland-headed hairs is often quite variable, even within a single population. It is noteworthy that in the strongly flanged plants of the Loma La Vieja-El Frío region these hairs are usually lacking.

In summary, although certain plants of particular populations are quite different in appearance from some plants of other populations, when the total pattern of variation is considered, no diagnosable units within *Miconia stenobotrys* are discernable (Figures 1 and 2).

#### TAXONOMIC TREATMENT

***Miconia stenobotrys*** (L. C. Rich.) Naud., Ann. Sc. Nat., 3 ser., 16: 240. 1851.

*Melastoma stenobotrys* L. C. Rich. in Bonpl. Mélast. 66, t. 30. 1816. *Chaenopleura stenobotrys* (L. C. Rich.) DC., Prodr. 3: 197. 1828. *Miconia stenobotrys* (L. C. Rich.) Naud., Ann. Sc. Nat. 3 sér. 16: 240. 1851. TYPE: "montibus insulae Hispaniolae," L. C. Richard s.n., P, not seen.

*Miconia buchii* Cogn. in Urban, Symb. antill. 5: 448. 1908. TYPE: HAITI. Dept. de L'Artibonite, Massif du Nord, Gros-Morne, Morne Belance, 1100 m, 26 Sept. 1925, E. L. Ekman H4914 (HOLOTYPE: s!; ISOTYPE: US!).

*Miconia artibonitensis* Urban & E. Ekman, Arkiv Bot. 22A(17): 43. 1929. TYPE: DOMINICAN REPUBLIC. Prov. Monte Criste [Dajabon], Cordillera Central, near Las Rosas by Rio Artibonite, 500 m, 6 June 1926, E. L. Ekman H6275 (HOLOTYPE: s!; ISOTYPES: U!, NY!, s!, US!).

*Miconia leptoneura* Urban & E. Ekman, Arkiv Bot. 22A(17): 49. 1929. TYPE:

HAITI. Dept. de L'Artibonite, Massif du Nord, near Hinche, between Cerca-Carvajal and Bois-Charles, 700 m, 12 May 1926, *E. L. Ekman H6075* (HOLOTYPE: s!; ISOTYPES: NY!, s!, US!).

*Miconia azuensis* Urban & E. Ekman, *Arkiv Bot.* 22A(17): 50. 1929. TYPE: DOMINICAN REPUBLIC. Prov. Azua, Cordillera Central, near Las Lagunas, 750 m, 13 June 1926, *E. L. Ekman H6374* (HOLOTYPE: s!).

*Shrub* or small *tree* to ca. 4 m tall. *Indumentum* of multicellular, minute, globular to matted and  $\pm$  irregularly branched hairs, these usually ephemeral and all parts of plant glabrescent, sometimes long-stalked, gland-headed hairs to 1.9 mm long (rarely elongate, stout-stalked, shortly branched hairs). *Young twigs* rectangular to square in cross-section, 2–5 mm wide, non-ridged with a nodal line, or with 4 flanges .2–2.3 mm broad, 2 extending below each point of petiole attachment and joining to form a very obscure to conspicuous U-shaped flange at the adjacent lower node, these sometimes restricted to inflorescence axis, glabrous, or with very sparse, minute, globular to matted and  $\pm$  irregularly branched hairs, these ephemeral, sometimes also with very sparse to sparse, long-stalked, gland-headed hairs, especially on portion of internode just above node (rarely with sparse, elongate, stout-stalked, shortly branched hairs); internodes .5–4.5(–9) cm long. *Leaves* with petiole 2–24 mm long, the indumentum sparse, minute, globular to matted and branched hairs, quickly glabrescent, occasionally with very sparse, long-stalked, gland-headed hairs (or rarely elongate, stout-stalked, shortly branched hairs); blade ovate to oblong (elliptic), 2.5–15.7  $\times$  .8–3.7 cm, slightly to strongly V-folded and falcate, coriaceous, the apex acuminate, the base acute to rounded (slightly cordate), the margin entire, serrulate only near tip, or serrulate/serrate to near base, ca. 5–100% of margin entire, the largest teeth (if present) .1–.6 mm long, plane to slightly revolute, especially near base, often with long-stalked, gland-headed hairs along margin at apex of teeth in juvenile shoots (occasionally in flowering shoots as well); venation acrodromous, suprabasal to nearly basal, with prominent midvein and 4 (or 2) secondary veins, with 2 conspicuous secondary veins placed ca. .7–6 mm in from margin, and usually 2 inconspicuous secondary veins closer to margin, and numerous percurrent tertiary veins oriented subperpendicular to midvein, the tertiary veins usually separated by composite inter-tertiary veins, especially proximally, the higher order veins orthogonal-reticulate; adaxial surface usually greenish (rarely slightly yellow) when dry,  $\pm$  glabrous, but

initially with sparse, minute, globular hairs to matted,  $\pm$  irregularly branched hairs, these quickly caducous, the midvein impressed, major secondary veins slightly impressed to flat, minor secondary and higher order veins flat, the surface appearing wrinkled after drying when druse crystals sparse (or  $\pm$  papillose due to presence of numerous druse crystals just beneath surface); abaxial surface light green to red tinged, sparsely covered with minute, globular hairs and inconspicuous, matted,  $\pm$  irregularly branched hairs, these usually quickly caducous, occasionally with a few long-stalked, gland-headed hairs on midvein and major secondary veins, occasionally also with very few ferruginous, elongate and irregularly branched hairs in axils of secondary veins with midvein,  $\pm$  glabrescent, the midvein prominently raised, the 2 major secondary veins slightly raised or flat, minor secondary and higher order veins flat, junctions of major secondary veins and midvein usually with pouch-like mite-domata. *Inflorescences* terminal, paniculate to extremely elongate cymes of 3 to 13 major branch-pairs (each of which is  $\pm$  a raceme-like cyme), 4.5–31.5 cm long, 2–5 cm across; proximal segment of lowermost inflorescence branches .4–2 cm long, distal internodes of inflorescence branches increasingly shorter, ultimate branches .5–7 mm long, glabrous or with very sparse, minute, globular hairs (occasionally with sparse, long-stalked, gland-headed hairs); peduncle 1.4–5 cm, with similar indumentum; each inflorescence branch associated with a caducous, ovate, elliptic, to linear bract, ca. 4–35  $\times$  1–8 mm, the apices acuminate to acute (rounded), the lowermost pair sometimes expanded and intergrading with leaves; flowers in dichasia, each subtended by 2 caducous, obovate bracteoles, ca. 3–8  $\times$  1.3–4 mm, glabrous or with indumentum of sparse, minute globular hairs, but with fringe of minute, unbranched to poorly branched hairs along margin, their apices rounded and hooded. *Flowers* with pedicel .3–1 mm long. *Hypanthium* cylindrical, free portion 1.1–1.7 mm long, the outer surface glabrous or very sparsely covered with minute, globular or  $\pm$  matted hairs, the inner surface glabrous and slightly ridged, the apices of the ridges not extending beyond rim or forming minute projections .05–.1 mm long. *External calyx lobes* (teeth) 5 (4), .05–.7  $\times$  1.4–2.4 mm, broadly triangular to  $\pm$  flat, with acute to acuminate apex, glabrous, sometimes with 1 to 3 long-stalked, hair-like projections .2–.5 mm long at or near apex of each lobe; *internal calyx lobes* 5 (4), .5–2  $\times$  1.5–2.6 mm, broadly ovate to ovate-triangular, pale green to red,  $\pm$  glabrous, the apex

rounded (acute), the margin entire to minutely erose, calyx tube .2–.5 mm. *Petals* 5 (4), broadly ovate or elliptic to orbicular, 2.8–4.5(–5.5) × 2.2–3.6 mm, glabrous, white (to red-tinged abaxially), imbricate and apically interlocking in bud, with the apex rounded, with an asymmetrically located notch. *Stamens* 10 (8), geniculate, glabrous; proximal segment (filament) 1.7–2.6 mm long, distal segment (anther and connective) 2.4–3.1 mm long, with minute dorsal projection, the anther 1.7–2.1 mm long, with fertile portion of anther sacs 1.4–1.7 mm long, opening by 2 longitudinal slit-like pores, the connective extended .6–1.2 mm beyond the base of the anther sacs. *Ovary* (2- or) 3- (or 4-) loculate ( $n = 1, 36, 3$ ), ca.  $\frac{2}{3}$ - to  $\frac{3}{4}$ -inferior, ovoid, short ovoid, or subglobose, 2–2.8 × 2–3 mm, glabrous and ridged, with fluted apical projection ca. .1–.6 mm long encircling base of style; style 3–6.7 mm long. *Berries* globose to subglobose, 5–6.5 × 5–7 mm, pale gray-blue, but red when immature, ± glabrous. Seeds angular-obovoid, .7–1.3 mm long; testa smooth to minutely roughened due to slight bulging of individual cells.  $2n = 34$  (Solt and Wurdack, 1980; based on *Wurdack 2591* (NY), from seeds from *Liogier 11575* (see below)).

**ETYMOLOGY:** The specific epithet refers to the species' narrow and extremely elongated cymose inflorescences. The major branch pairs, numbering as many as 13, are typically well separated from each other. *Miconia stenobotrys* has longer cymes than any other species of *Miconia* sect. *Chaenopleura* in the Greater Antilles; they vary from 4.5 to 31.5 cm long and 2 to 5 cm wide.

**SPECIMENS EXAMINED:** HAITI. **Dept. de L'Artibonite:** Massif du Nord, La Brande [Branle] to Mt. Balance [Belance], 1065 m, *Nash & Taylor 1713* (NY). **Dept. de L'Ouest:** Massif des Cahos [= Massif Montagnes Noires], Petite-Rivière de l'Artibonite, Médor, 800 m, *Ekman H3396* (GH, U, S, US); Massif des Cahos, group Las Caobas [= Lascahobas], Mirebalais, Calumette, ca. 900 m, *Ekman H5567* (NY, S); Massif des Matheux [actually from Montagnes Trou D'Eau], Grand-Bois, Cornillon, 1200 m, *Ekman H5687* (A, S); near Perodin, 1200 m, *Picarda 1636* (GH, L, S). DOMINICAN REPUBLIC. **Prov. Azua:** Cordillera Central, San Juan, Loma la Vieja, southeastern spur, 1300 m, *Ekman H13410* (A, GH, NY, S, US); Loma la Vieja, in thickets, 800 m, *Ekman H13441* (GH, S). **Prov. La Vega:** Cordillera Central, Jarabacoa, Salto del Jimenoa, *Augusto 214* (JBSD); Constanza, 1200 m, *Ekman H14085* (S); near Jarabacoa, 560 m, *Fuertes 1636* (A, BM, E, F, GH, L, NY, US); without specific locality, *Fuertes 1821b* (A, E, NY); Gajo de Constanza, 1200 m, *Jiménez 2115* (U, US); between Constanza and Jarabacoa, ca. 23 km N of El Río, 760 m, *Judd 2955* (FLAS, JBSD, MSC, NY); ca. 20 km N of El Río on rd. to Jarabacoa, 860 m, *Judd 2958* (FLAS, US); ridge behind Hotel Nueva Suiza, 1200–1380 m, *Judd 5125* (DUKE, F, FLAS, GH, JBSD, MO, MSC, NY, S, US); ca. 21 km N of

El Río on rd. to Jarabacoa, 760 m, *Judd 5143* (FLAS, MO, MSC); 7.4 km SE of Jarabacoa, 810 m, *Judd 6626* (DUKE, F, FLAS, JBSD, MO, NY, S, US); 6.7 km SE of Jarabacoa, 720 m, *Judd 6627* (F, FLAS, MO); 6.1 km SE of Jarabacoa, 700 m, *Judd 6629* (FLAS); just S of Constanza on rd. to Valle Nuevo, 1375 m, *Judd 6653* (FLAS, MSC, S); Constanza, at Salto de Constanza, 1050 m, *Judd 6654* (FLAS, NY); ridge behind Hotel Nueva Suiza, along Río Grande, 1100–1250 m, *Judd 6659* (FLAS); La Ciénaga de Manabao, Los Guanos, Jarabacoa, *Liogier 12043* (NY, US); Río Grande, Constanza, 1250 m, *Liogier 19505* (JBSD, NY, US); near Manabao, Jarabacoa, 1000 m, *Liogier 20038* (JBSD, NY); La Ciénaga de Manabao, Jarabacoa, 1000 m, *Liogier 23584* (JBSD); 15–20 km N of El Río on rd. to Jarabacoa, 1000 m, *Mejía 7494* (FLAS, JBSD); El Pino de Siete Hojas, at La Cuenca de Yaquecillo, 16 km NW of Constanza, 1100 m, *Mejía 8833* (JBSD); 12 km NW of Constanza on rd. to Los Corralitos, near Los Cayetanos, 1000 m, *Mejía 8858* (FLAS, JBSD); 2.5 km SE of Constanza, 1250 m, *Proctor 39060* (U, JBSD); Constanza, along Río Grande, 1.5 km SW of Nueva Suiza Hotel, 1125 m, *Sauleda 7516* (JBSD, UPR); S of (behind) Hotel Nueva Suiza, 1200–1380 m, *Skean 1748* (FLAS, JBSD, MICH); rd. between Jarabacoa and Paso Bajito, 7.4 km S of Jarabacoa, 810 m, *Skean 3220* (FLAS, JBSD, MICH); just S of Constanza on rd. to Valle Nuevo, 1375 m, *Skean 3246* (FLAS, JBSD, MICH); near Constanza, 1200 m, *Tuerckheim 3191* (BM, E, F, GH, L, M, MO, NY, S, US); Constanza to Valle Nuevo, *Woodbury s.n.*, 6 April 1971 (UPR); 4 km SE of Constanza on road to Las Auyamas, in valley of the Río Grande, 1300 m, *Zanoni 23181* (FLAS, JBSD, US). **Prov. San Juan:** Cordillera Central, Piedra del Aguacate to Río del Oro, *Howard 9433A* (NY); Parque Nacional José del Carmen Ramírez, 14 km N of Arroyo Cano, near Los Fríos, 400 m E of the “caseta de la Dirección Nacional de Parques,” 1380 m, *García 1245* (FLAS, JBSD); Parque Nacional José del Carmen Ramírez, on trail between “Forestry House” (Caseta del Forestal) to Arroyo Palo de Cuello; above Los Fríos, on the jeep road from Arroyo Cano, 1300–1400 m, *Judd 6693* (A, FLAS, JBSD, MO, NY, US); *ibid.*, *Judd 6694* (FLAS, JBSD, NY, US); near Los Fríos, along “jeep road” from Arroyo Cano, just below (S of) “Forestry House” in Parque Nacional José del Carmen Ramírez, 1250 m, *Judd 6698* (DUKE, F, FLAS, GH, JBSD, MO, MSC, NY, S, UC, US); *ibid.*, *Skean 3269* (FLAS, JBSD, MICH). **Prov. Santiago:** Cordillera Central, moist ravine on outskirts of San José de las Matas, 760 m, *Burch & Jiménez 2476* (US); El Rubio, Arroyo Bonito, *Canela s.n.*, 16 Nov. 1940 (JBSD); Puente Aguas Caliente, Cuenca de Rio Bao, *Hernández 11* (JBSD); *ibid.*, *Hernández 4-3/3* (JBSD); Pico del Rubios, 1000 m, *Jiménez 1068* (US); El Rubio Peak, 800–940 m, *Liogier 11260* (NY, US); Arroyo Antonzape Malo, Mata Grande, *Liogier 11575* (NY); San José de las Matas, Punta Loma on Río Maguá, 800 m, *Valeur 736* (A, BM, F, U, MICH, MO, NY, S, US). **Prov. Santiago Rodriguez:** Cordillera Central, Monción, Lagunas de Cenoví, 1100 m, *Ekman H12870* (A, GH, S, US); La Cidra, Monción, 1000 m, *Jiménez 1616* (US); *ibid.*, 640 m, *Jiménez 2910* (US); El Aguacate, La Leonor, Monción, 600 m, *Liogier 13218* (GH, NY, US); La Lomita, La Leonor, Monción, 550 m, *Liogier 16342* (NY, US); Sabaneta, Lagunas de Cenobí, *Valeur 17* (A, S, US); Lagunas de Cenoví, ca. 3.5 hr. by mule S of El Aguacate (de Monción), 1050–1100 m, *Zanoni 43778* (FLAS, JBSD).

**DISTRIBUTION AND ECOLOGY:** *Miconia stenobotrys* occurs from 550 to 1400 m elev. in moist forests of *Pinus occidentalis* Sw. (and less commonly broad-leaved thickets) of the Cordillera

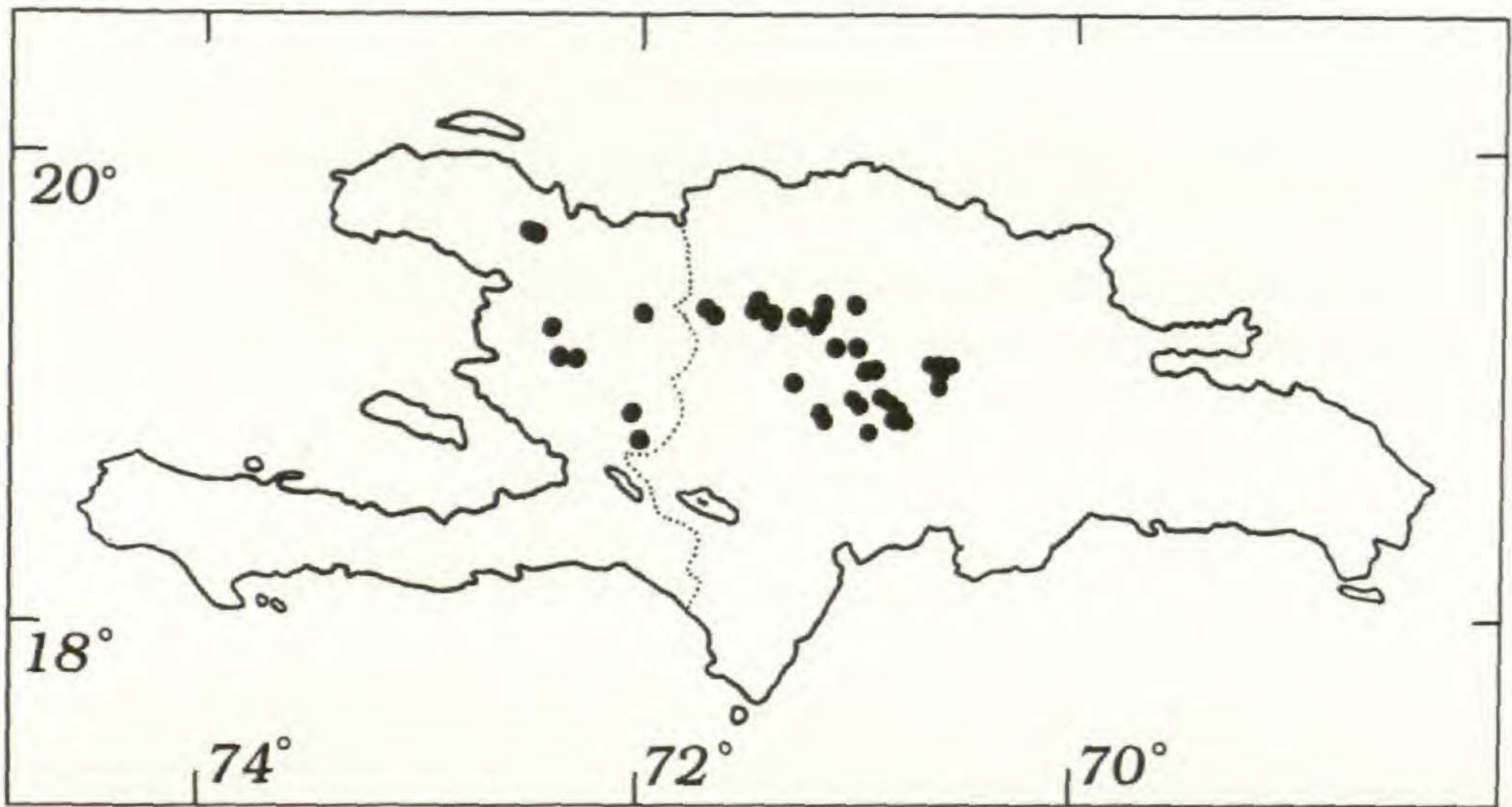


Figure 4. Distribution of *Miconia stenobotrys* (Hispaniola).

Central/Massif du Nord (Dominican Republic/Haiti), Massif Montagnes Noires/Massif des Cahos (Haiti), and Montagnes Trou D'Eau (Haiti); Figure 4. Associated melastomes include: *Calycogonium reticulatum* (Cogn.) Judd & Skee, *Calycogonium* spp., *Clidemia angustilamina* Judd & Skee, *C. hirta* (L.) D. Don, *C. umbellata* (Mill.) L. O. Williams, *Mecranium acuminatum* (DC.) Skee, *M. puberulum* Cogn., *Meriania involucrata* (Desr.) Naud., *Miconia adenocalyx* Urban & E. Ekman, *M. laevigata* (L.) DC., *M. mirabilis* (Aubl.) L. O. Williams, *M. prasina* (Sw.) DC., *M. santanana* Judd & Skee (ined.), *M. tetrandra* (Sw.) DC., *Ossaea* [*Sagraea*] *scalpta* (Vent.) DC., *Tetrazygia crotonifolia* (Desr.) DC., *T. longicollis* Urban & Cogn., and *Tibouchina longifolia* (Vahl) Baill.

*Miconia stenobotrys* is one of the most widely distributed of the Hispaniolan members of *Miconia* sect. *Chaenopleura*. It is elevationally and/or geographically isolated from the possibly related *M. krugii*, *M. samanensis*, and *M. zanonii* (see also Judd & Beaman, 1988). It has been collected in the vicinity of only two species of sect. *Chaenopleura*, both members of the *Miconia ferruginea* complex, i.e., *M. adenocalyx* and *M. santanana* (ined.) (Judd & Skee, submitted). These species, however, typically grow in moist cloud forests or moist broadleaved forests along streams, while *M. stenobotrys* is characteristic of pineland habitats, and are likely isolated ecologically. An unusual specimen (Ekman 12895, s) is intermediate between *M. stenobotrys* and *M. santan-*

*ana* and may represent a hybrid between these two sympatric species. This specimen is aberrant in its broadly branched cymes (with cymose-branched lower branches), stems inflorescence axes with numerous long-stalked gland-headed hairs and persistent, ferruginous, stellate-branched hairs, and  $\pm$  non-falcate leaves with tertiary veins slightly abaxially raised.

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